

REMARKS

Claims 1 and 3-6 are currently pending in the present application. Claims 2 and 7 have been cancelled herein. Claims 1 and 4 have been amended, which find support in the specification, at least, at page 5, lines 7-8 and previous claims 2 and 7. No new matter has been added by way of the present claim amendments.

Rejections under 35 U.S.C. §102 and 35 U.S.C. §103

Claims 1, 2, 4 and 6 stand rejected under 35 U.S.C. §102(b) as being anticipated by Puri et al. (hereinafter “Puri”).

Claims 3 and 5 stand rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Puri.

Claim 7 stands rejected under 35 U.S.C. §103(a) as being rendered obvious by Puri in view of 34th Symposium.

Puri does not disclose or teach that the polysaccharide is starch, an agar, or a guar gum. As described in page 5, lines 8 to 17 of the present specification, the starch is different from the cellulose with respect to the physical and chemical properties, resulting in a difference in reactivity.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Since Puri does not teach each and every element of the presently claimed invention, Puri cannot properly anticipate the claimed invention, within the meaning of 35 U.S.C. §102(b).

With respect to the outstanding rejections under 35 U.S.C. §103(a), Applicants respectfully submit that neither Puri nor the combination of Puri and 34th Symposium render the claimed invention obvious.

The Examiner should note that claim 7 has been cancelled herein, thus the combination of Puri and 34th Symposium is rendered moot. Further, Applicants respectfully submit that the Examiner is incorrect in asserting that the carbon dioxide content in the liquid phase of Puri is understood to be a function of the temperature and pressure conditions of the reaction and are likely to be the same as the present invention. The Puri methodology does not show any appreciation for the effect of CO₂ addition.

Puri discloses that, “cooks with 100 or 300 g of substrate per charge gave more digestible products when exploded from higher pressures” (*See* page 3155, third paragraph and page 3156, Table III). Apparently from Table I described in page 3152, there is an inversely proportional relationship between the gas pressure and CO₂. That is, the higher gas pressure is, the lower the amount of CO₂. Therefore, Applicants submit that Puri teaches that hydrolysis of celluloses is conducted effectively by gas pressure, not the CO₂ amount.

This is in stark contrast to the present invention, wherein the carbon dioxide amount is an important feature and the amount of carbon dioxide to be used is preferably large (*See* page 7, line 26 and Examples).

Generally, formic or acetic acid is produced when hemicellulose is hydrolyzed under applied pressure. Thus, hydrolysis is promoted by the production of formic or acetic acid. This is known as the “autocatalytic effect”.

However, in Puri, lignocellulose is treated and organic acids are produced (*See* page 3158; column C in Table V). Therefore, it is arguable whether Puri discloses that the hydrolysis of the lignocellulose is conducted by CO₂ or by the produced organic acids.

According to the present invention, the hydrolysis reaction can be performed effectively in a short period of time, and secondary degradation of generated monosaccharides can be inhibited, thereby increasing the yield of glucose generated as a primary product. Additionally, the generation of 5-HMF (5-hydroxymethylfurfural), which causes inhibition of fermentation, as a by-product can be suppressed (page 2, lines 13 to 22, and page 13, line 24 to page 14, line 1). Suppression of the generation of 5-HMF is important to the use of the hydrolyzed solution as a material for fermentation without treatment.

Therefore, in light of the above noted distinctions, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections under 35 U.S.C. § 102(b) and §103(a).

In view of the foregoing, Applicants believe the pending application is in condition for allowance. A Notice of Allowance is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Monique T. Cole, Reg. No. 60,154 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By  #43575

MTK

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